

Interactive comment on “GEM-MACH-PAH (rev2488): a new high-resolution chemical transport model for North American PAHs and benzene” by Cynthia H. Whaley et al.

Anonymous Referee #2

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General comment The present manuscript describes the improvements in PAH modelling in North America. The results with an analysis and discussion of the biases are lengthy and clearly presented. The strength and remaining limitations of the modelling system are put in evidence.

Major comment Possible reasons like the missing reaction with NO₃ radicals are given for the high BaP model bias. I would like to see a discussion of what the recent results of Mu et al. 2018(DOI:10.1126/sciadv.aap7314), if implemented in GEM-MACH-PAH, would change the predictions for BaP. The reduced OA diffusivity would increase BaP lifetime especially in winter. On the other hand the ROI temperature-dependent reac-

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tion of BaP is predicted to be the major cause of changes compared to the Kwamena's parameterization.

Minor comments In a few instances references to figure panels a), b) and c) are given although no trace of it can be found on figure 6 and 7, for example.

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-324>, 2018.

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